

## Claims

1. A device for moving and positioning an object in space, having a base element (1), having at least three motor/gearing units (5) disposed on the base element (1), having at least three arms (2), which at a first end are each connected to a motor/gearing unit (5) and which at a second end are hinge-connected to a common supporting element (3) on which at least one gripping means for gripping of the object is disposed, the motor/gearing units (5) being disposed in such a manner in a plane defined by the base element (1) or in a plane running parallel thereto that they form the sides of an imaginary polygon, characterized in that the motor/gearing unit (5) has a gearing (52), at least one gear step of which is tensioned, and in that the gearing (52), by virtue of material-locking and/or positive-locking connection of gearing components, is free or virtually free from backlash over the whole of the motional range of the gearing (52).
2. The device as claimed in claim 1, characterized in that precisely three arms (2) and precisely three motor/gearing units (5) are present and in that one each of the motor/gearing units (5) is disposed on one side each of an imaginary triangle.
3. The device as claimed in claim 2, characterized in that the imaginary triangle is equilateral.
4. The device as claimed in claims 1 to 3, characterized in that a telescopic fourth shaft (4) is present, which is connected to the carrier element (3).
5. The device as claimed in one of claims 1 to 4, characterized in that the motor/gearing unit (5) has at least one gear step, at least one of these gear steps, preferably all, having coaxially running rotation axes on the drive side and the power-take-off side, and in that the

motor/gearing unit (5) has a motor (50) which is coaxially connected to this at least one gear step.

6. The device as claimed in one of claims 1 to 5, characterized in that the gearing (52) is a planetary gearing and in that the planetary gearing has planet wheels which mesh between a sun wheel and a ring wheel, are respectively fixed by a planet wheel bolt to a planet carrier and are mounted rotatably about the respective planet wheel bolt.

7. The device as claimed in one of claims 1 to 5, characterized in that the gearing (52) is a planetary gearing and in that the planetary gearing has planet wheels which mesh between a sun wheel and a ring wheel, the axes of the planet wheels being arranged offset in comparison to the axis of the sun wheel.

8. The device as claimed in one of claims 1 to 7, characterized in that the gearing (52) is of single-step or multi-step configuration.

9. The device as claimed in claim 1, characterized in that the gearing (52) is a combined spur-planetary gearing, at least one gear step being present, the drive-side axis of which runs axially offset relative to its axis on the power-take-off side.

10. The device as claimed in one of claims 1 to 9, characterized in that the at least one tensioned gear step is tensioned in a rotationally symmetric manner.